

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Yulun Wang, et al.

Application No.: 09/996,419

Filed: November 28, 2001

For: **AUTOMATED ENDOSCOPE SYSTEM
FOR OPTIMAL POSITIONING**

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PRELIMINARY AMENDMENT UNDER 37 C.F.R. § 1.115

U.S. Patent and Trademark Office
Washington, D.C., 20231

Sir:

The applicant would like to file the following Preliminary Amendment for the above-entitled patent application.

IN THE CLAIMS

Please cancel claims 1-10.

Please add claims 11-30.

- 1 11. (NEW) A system that allows a user to control a movement of an endoscope,
2 the endoscope being located within an endoscope coordinate system that has a left-right axis and
3 an up-down axis which are orthogonal to each other and to a longitudinal axis of the endoscope,
4 comprising:
5 a first actuator located within a world coordinate system;
6 a second actuator that is coupled to said first actuator and located in the world coordinate
7 system, said first and second actuators being capable of moving the endoscope;

8 an input device that can receive a command from the user to move the endoscope along
9 the up-down axis in the endoscope coordinate system;

10 a controller that receives the user command and transforms the movement of the
11 endoscope in the endoscope coordinate system to a movement of the endoscope in the world
12 coordinate system, and provides output signals to said first and second actuators to move the
13 endoscope in the world coordinate system so that the endoscope moves along the up-down axis.

1 12. (NEW) The system of claim 11, further comprising a third actuator coupled to
2 said second actuator and located within the world coordinate system.

1 13. (NEW) The system of claim 11, further comprising an end effector that is
2 coupled to said controller and spins the endoscope.

1 14. (NEW) The system of claim 11, wherein said input device is a foot pedal.

1 15. (NEW) The system of claim 11, wherein said first and second actuators
2 include electric motors.

1 16. (NEW) The system of claim 11, further comprising a first position sensor
2 coupled to said first actuator and a second position sensor coupled to said second actuator.

1 17. (NEW) The system of claim 11, wherein said controller transforms the
2 movement of the endoscope in the endoscope coordinate system to movement of the endoscope
3 in the world coordinate system in accordance with a plurality of transformation equations.

1 18. (NEW) The system of claim 11, further comprising a table that is coupled to
2 said first and second actuators.

1 19. (NEW) A medical system that can be controlled by a user, comprising:
2 a first actuator located within a world coordinate system;
3 a second actuator that is coupled to said first actuator and located in the world coordinate
4 system;
5 an endoscope that is coupled to said first and second actuators, said endoscope being
6 located within an endoscope coordinate system that has a left-right axis and an up-down axis
7 which are orthogonal to each other, and to a longitudinal axis of the endoscope;
8 an input device that can receive a command from the user to move the endoscope along
9 the up-down axis in the endoscope coordinate system; and,
10 a controller that receives the user command and transforms the movement of the
11 endoscope in the endoscope coordinate system to a movement of the endoscope in the world
12 coordinate system, and provides output signals to said first and second actuators to move the
13 endoscope in the world coordinate system so that the endoscope moves along the up-down axis.

1 20. (NEW) The system of claim 19, further comprising a third actuator coupled to
2 said second actuator and located within the world coordinate system.

1 21. (NEW) The system of claim 19, further comprising an end effector that is
2 coupled to said controller and spins the endoscope.

1 22. (NEW) The system of claim 19, wherein said input device is a foot pedal.

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1 23. (NEW) The system of claim 19, wherein said first and second actuators
2 include electric motors.

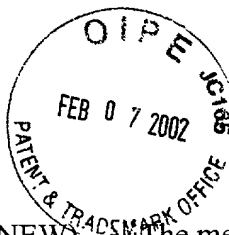
1 24. (NEW) The system of claim 19, further comprising a first position sensor
2 coupled to said first actuator and a second position sensor coupled to said second actuator.

1 25. (NEW) The system of claim 19, wherein said controller transforms the
2 movement of the endoscope in the endoscope coordinate system to movement of the endoscope
3 in the world coordinate system in accordance with a plurality of transformation equations.

1 26. (NEW) The system of claim 19, further comprising a table that is coupled to
2 said first and second actuators.

1 27. (NEW) A method for controlling a movement of an endoscope, comprising:
2 inputting a command to move an endoscope along an up-down axis of a endoscope
3 coordinate system, wherein the up-down axis and a left-right axis are orthogonal to each other
4 and a longitudinal axis of the endoscope;
5 transforming the command to move the endoscope in the endoscope coordinate system to
6 a movement in a world coordinate system; and,
7 sending output signals to a first actuator and a second actuator to move the endoscope in
8 the world coordinate system so that the endoscope moves along the up-down axis.

1 28. (NEW) The method of claim 27, wherein the endoscope is spun.



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1 29. (NEW) The method of claim 27, wherein the transformation between the
2 endoscope coordinate system and the world coordinate system is performed in accordance with a
3 plurality of transformation equations.

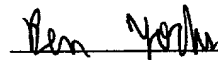
1 30. (NEW) The method of claim 27, wherein the endoscope pivots about a pivot point
2 formed at an incision of a patient.

The applicant requests that the Examiner enter this amendment and examine the above-entitled application.

Respectfully submitted,

IRELL & MANELLA LLP

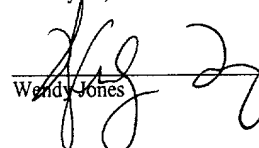
Dated: January 22, 2002


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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: U.S. Patent and Trademark Office, Washington, D.C. 20231, on January 22, 2002.


Wendy Jones
Date 1/22/02